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2014

Test 2088: Challenger MT765E

Nebraska Tractor Test Laboratory

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NEBRASKA OECD TRACTOR TEST 2088—SUMMARY 937

CHALLENGER MT765E DIESEL

16 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1060 rpm)						
311.98 (232.64)	2099	19.66 (74.43)	0.442 (0.269)	15.87 (3.13)	1.09 (4.12)	
Standard Power Take-off Speed (1000 rpm)						
344.28 (256.73)	1980	20.15 (76.27)	0.411 (0.250)	17.09 (3.37)	1.25 (4.73)	
Maximum Power (1 hour)						
357.07 (266.27)	1800	19.55 (74.00)	0.384 (0.234)	18.27 (3.60)	1.31 (4.96)	

VARYING POWER AND FUEL CONSUMPTION

311.98 (232.64)	2099	19.66 (74.43)	0.442 (0.269)	15.87 (3.13)	1.09 (4.12)	Air temperature
270.41 (201.65)	2141	18.00 (68.14)	0.467 (0.284)	15.02 (2.96)	1.01 (3.83)	74°F (23°C)
205.20 (153.01)	2163	14.54 (55.04)	0.497 (0.302)	14.11 (2.78)	0.72 (2.73)	Relative humidity
137.30 (102.38)	2172	10.68 (40.44)	0.546 (0.332)	12.85 (2.53)	0.28 (1.06)	69%
69.08 (51.51)	2181	7.13 (27.01)	0.725 (0.441)	9.68 (1.91)	0.30 (1.12)	Barometer
3.09 (2.30)	2187	4.18 (15.81)	9.486 (5.770)	0.74 (0.15)	0.17 (0.66)	28.61" Hg (96.88 kPa)

Maximum torque - 1249 lb.-ft. (1693 Nm) at 1200 rpm

Maximum torque rise - 59.9%

Torque rise at 1681 engine rpm - 42%

Power increase at 1800 engine rpm - 14.4%

DRAWBAR PERFORMANCE (Unballasted)

FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F (°C) cool- ing med bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—8th Gear										
272.10 (202.90)	18207 (80.99)	5.61 (9.02)	2100	2.6	0.506 (0.308)	13.88 (2.73)	0.033 (0.020)	190 (88)	76 (25)	28.69 (97.16)
75% of Pull at Maximum Power—8th Gear										
212.33 (158.33)	13676 (60.83)	5.82 (9.37)	2157	1.6	0.546 (0.332)	12.85 (2.53)	0.038 (0.023)	189 (87)	82 (28)	28.68 (97.12)
50% of Pull at Maximum Power—8th Gear										
143.48 (106.99)	9106 (40.50)	5.91 (9.51)	2170	0.7	0.587 (0.357)	11.96 (2.36)	0.026 (0.016)	189 (87)	82 (28)	28.68 (97.12)
75% of Pull at Reduced Engine Speed—11th Gear										
212.37 (158.36)	13658 (60.75)	5.83 (9.38)	1513	1.6	0.435 (0.265)	16.13 (3.18)	0.035 (0.021)	184 (84)	82 (28)	28.68 (97.12)
50% of Pull at Reduced Engine Speed—11th Gear										
143.90 (107.30)	9096 (40.46)	5.93 (9.54)	1526	0.7	0.463 (0.282)	15.15 (2.98)	0.036 (0.022)	184 (84)	82 (28)	28.68 (97.12)

Location of tests: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

Dates of tests: June 4 - 10, 2014

Manufacturer: AGCO Corporation, 4205 River Green Parkway, Duluth Ga 30096

CONSUMABLE Fluids, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8429 **Fuel weight** 7.018 lbs/gal (0.841 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil** SAE 15W-40 **API service classification** CJ-4 **Transmission and hydraulic lubricant** AGCO Permatran 821 XL fluid **Total time engine was operated:** 17.5 hours

ENGINE: Make AGCO **Power Diesel Type** seven cylinder vertical with two turbochargers, water to air intercooler, air to air intercooler and D.E.F. (diesel exhaust fluid) technology **Serial No.** *Z36358* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.370" x 5.709" (111.0 mm x 145.0 mm) **Compression ratio** 16.7 to 1 **Displacement** 599 cu in (9822 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element and water separator **Fuel cooler** radiator for pump return fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 127.8 - 138.1 lb/h (58.0 - 62.6 kg/h) **High idle:** 2150 - 2200 rpm **Turbo boost:** nominal 34.8 - 37.7 psi (240 - 260 kPa) as measured 36.1 psi (249 kPa)

CHASSIS: Type tracklayer-rubber tracked **Serial No.** *AGCC0765AENC1002* **Track width** 88.0" (2235 mm) to 119.5" (3035 mm) **Length of track on ground** 102.4" (2600 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled power shift **Nominal travel speeds mph (km/h)** first 1.66 (2.67) second 2.11 (3.40) third 2.66 (4.28) fourth 3.38 (5.44) fifth 4.03 (6.49) sixth 4.54 (7.31) seventh 5.12 (8.24) eighth 5.76 (9.27) ninth 6.48 (10.43) tenth 7.29 (11.73) eleventh 8.22 (13.23) twelfth 9.26 (14.90) thirteenth 11.02 (17.73) fourteenth 14.00 (22.53) fifteenth 17.72 (28.52) sixteenth 24.64 (39.65) at 2300 rpm, reverse 1.33 (2.14), 3.22 (5.18), 3.63 (5.84), 8.82 (14.19) **Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated by foot pedal **Steering** electro-hydraulic differential steering controlled by steering wheel **Power take-off** 1000 rpm at 1980 engine rpm **Unladen tractor mass** 33235 lb (15075 kg)

DRAWBAR PERFORMANCE

Unballasted at 2100 RPM

DRAWBAR POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th Gear										
245.34 (182.95)	30096 (133.87)	3.06 (4.92)	2099	9.6	0.555 (0.337)	12.65 (2.49)	0.037 (0.023)	190 (88)	69 (20)	28.67 (97.09)
5th Gear										
262.31 (195.60)	26107 (116.13)	3.77 (6.06)	2100	6.5	0.525 (0.319)	13.37 (2.63)	0.034 (0.021)	190 (88)	73 (23)	28.67 (97.09)
6th Gear										
267.46 (199.44)	23244 (103.39)	4.32 (6.94)	2101	4.9	0.515 (0.313)	13.62 (2.68)	0.034 (0.021)	189 (87)	75 (24)	28.69 (97.16)
7th Gear										
269.24 (200.77)	20439 (90.92)	4.94 (7.95)	2100	3.4	0.511 (0.311)	13.73 (2.71)	0.033 (0.020)	190 (88)	75 (24)	28.69 (97.16)
8th Gear										
272.10 (202.90)	18207 (80.99)	5.61 (9.02)	2100	2.6	0.506 (0.308)	13.88 (2.73)	0.033 (0.020)	190 (88)	76 (25)	28.69 (97.16)
9th Gear										
269.80 (201.19)	15951 (70.95)	6.34 (10.20)	2100	2.1	0.509 (0.310)	13.78 (2.71)	0.033 (0.020)	189 (87)	78 (25)	28.68 (97.12)
10th Gear										
271.09 (202.15)	14177 (63.06)	7.17 (11.54)	2099	1.6	0.507 (0.309)	13.83 (2.73)	0.034 (0.020)	190 (88)	79 (26)	28.70 (97.19)
11th Gear										
266.07 (198.40)	12286 (54.65)	8.12 (13.07)	2100	1.1	0.515 (0.313)	13.64 (2.69)	0.034 (0.021)	190 (88)	79 (26)	28.69 (97.16)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

Note: This tractor has a driveline protection system that limits the maximum engine torque in gears 1 through 4.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests the fuel temperature at the injection pump inlet was maintained at 96°F (36°C). The performance figures on this summary were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2088**, Nebraska Summary 937, December 19, 2014.

Roger M. Hoy
Director

M.F. Kocher
J.D. Luck
P.J. Jasa
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB

dB(A)

At no load in 6th gear	72.0
Bystander in 16th gear	89.7

TIRES, BALLAST AND WEIGHT

Track width

Ballast - Cast iron(front end)
- Cast iron(front idlers)

Height of Drawbar

Static Weight with operator

With Ballast

25.0 in (635 mm)
3245 lb (1472 kg)
2345 lb (1064 kg)
21.0 in (535 mm)
39000 lb(17690 kg)

Without Ballast

25.0 in (635 mm)
None
None
20.0 in (510 mm)
33410 lb(15154 kg)

DRAWBAR PERFORMANCE
(Unballasted at 1800 RPM)
MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th Gear										
231.14 (172.36)	31160 (138.60)	2.79 (4.48)	1969	12.3	0.540 (0.328)	13.01 (2.56)	0.041 (0.025)	188 (87)	70 (21)	28.67 (97.08)
5th Gear										
272.01 (202.84)	29386 (130.72)	3.48 (5.59)	2015	10.3	0.520 (0.316)	13.50 (2.66)	0.037 (0.022)	189 (87)	74 (23)	28.68 (97.12)
6th Gear										
287.77 (214.59)	28566 (127.07)	3.78 (6.08)	1927	9.3	0.488 (0.297)	14.37 (2.83)	0.037 (0.022)	189 (87)	75 (24)	28.68 (97.12)
7th Gear										
294.79 (219.82)	27408 (121.92)	4.04 (6.49)	1800	8.0	0.466 (0.283)	15.06 (2.97)	0.037 (0.022)	189 (87)	76 (24)	28.69 (97.16)
8th Gear										
303.66 (226.44)	24445 (108.74)	4.66 (7.49)	1800	5.6	0.453 (0.275)	15.51 (3.06)	0.036 (0.022)	189 (87)	77 (25)	28.70 (97.19)
9th Gear										
306.64 (228.66)	21601 (96.08)	5.33 (8.57)	1800	4.1	0.448 (0.272)	15.68 (3.09)	0.036 (0.022)	189 (87)	77 (25)	28.69 (97.16)
10th Gear										
311.02 (231.92)	19245 (85.60)	6.06 (9.73)	1801	3.2	0.441 (0.268)	15.93 (3.14)	0.035 (0.021)	189 (87)	78 (26)	28.69 (97.16)
11th Gear										
307.11 (229.01)	16732 (74.43)	6.89 (11.08)	1800	2.3	0.445 (0.270)	15.78 (3.11)	0.036 (0.022)	189 (87)	80 (27)	28.69 (97.16)
12th Gear										
311.13 (232.01)	14981 (66.64)	7.79 (12.54)	1800	1.8	0.440 (0.268)	15.93 (3.14)	0.036 (0.022)	189 (87)	81 (27)	28.68 (97.12)
13th Gear										
311.60 (232.36)	12523 (55.71)	9.33 (15.02)	1801	1.2	0.439 (0.267)	15.99 (3.15)	0.035 (0.021)	189 (87)	81 (27)	28.67 (97.09)

DRAWBAR PERFORMANCE
(Ballasted at 1800 RPM)
MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th Gear										
242.85 (181.09)	32873 (146.23)	2.77 (4.46)	1858	7.6	0.480 (0.292)	14.64 (2.88)	0.045 (0.027)	187 (86)	66 (19)	28.64 (96.99)
5th Gear										
295.54 (220.38)	31196 (138.77)	3.56 (5.72)	1983	6.8	0.484 (0.294)	14.51 (2.86)	0.039 (0.024)	189 (87)	67 (19)	28.64 (96.99)
6th Gear										
306.69 (228.70)	30330 (134.91)	3.80 (6.11)	1872	6.4	0.457 (0.278)	15.34 (3.02)	0.040 (0.024)	188 (87)	68 (20)	28.64 (96.99)
7th Gear										
308.55 (230.09)	27759 (123.48)	4.17 (6.71)	1800	5.1	0.447 (0.272)	15.71 (3.09)	0.040 (0.024)	188 (86)	69 (21)	28.64 (96.99)
8th Gear										
314.20 (234.30)	24778 (110.22)	4.76 (7.65)	1802	3.9	0.439 (0.267)	15.99 (3.15)	0.039 (0.024)	187 (86)	70 (21)	28.64 (96.99)
9th Gear										
313.59 (233.84)	21793 (96.94)	5.40 (8.68)	1800	2.9	0.438 (0.267)	16.01 (3.15)	0.039 (0.024)	187 (86)	70 (21)	28.64 (96.99)
10th Gear										
315.85 (235.53)	19370 (86.16)	6.12 (9.84)	1800	2.4	0.435 (0.265)	16.14 (3.18)	0.038 (0.023)	188 (86)	70 (21)	28.64 (96.99)
11th Gear										
312.11 (232.74)	16861 (75.00)	6.94 (11.17)	1801	1.7	0.440 (0.268)	15.95 (3.14)	0.039 (0.024)	188 (86)	72 (22)	28.62 (96.92)
12th Gear										
313.22 (233.56)	14984 (66.65)	7.84 (12.62)	1801	1.4	0.439 (0.267)	15.98 (3.15)	0.039 (0.024)	188 (87)	72 (22)	28.63 (96.95)
13th Gear										
313.88 (234.06)	12585 (55.98)	9.36 (15.06)	1798	1.0	0.437 (0.266)	16.05 (3.16)	0.039 (0.024)	188 (87)	73 (23)	28.63 (96.95)

HYDRAULIC PERFORMANCE

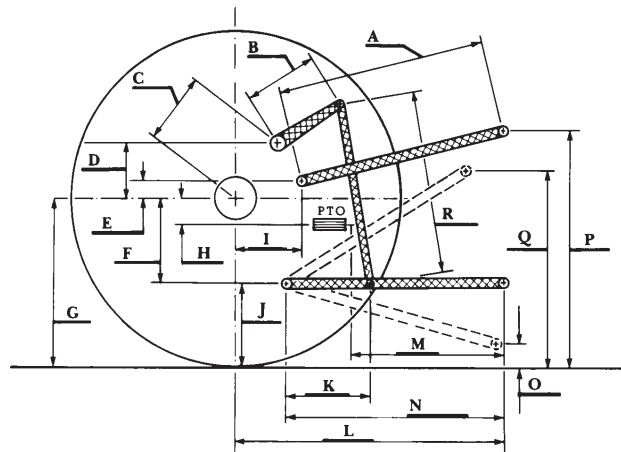
CATEGORY: III

Quick Attach: yes

OECD Static test

Maximum force exerted through whole range:	17263 lbs (76.8 kN)	
	Standard pump	High flow pump
	3 outlet sets combined	
i) Sustained pressure at compensator cutoff:	2903 psi (202 bar)	2888 psi (199 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	59.4 GPM (224.9 l/min)	85.2 GPM (322.7 l/min)
iii) Pump delivery rate at maximum hydraulic power:	56.0 GPM (212.0 l/min)	80.2 GPM (303.4 l/min)
Delivery pressure:	2836 psi (196 bar)	2739 psi (189 bar)
Power:	92.7 HP (69.1 kW)	128.1 HP (95.5 kW)
	single outlet set	
i) Sustained pressure at compensator cutoff:	2871 psi (198 bar)	2892 psi (199 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	37.7 GPM (142.5 l/min)	39.8 GPM (150.7 l/min)
iii) Pump delivery rate at maximum hydraulic power:	34.6 GPM (130.8 l/min)	36.8 GPM (139.2 l/min)
Delivery pressure:	2384 psi (164 bar)	2368 psi (163 bar)
Power:	48.1 HP (35.8 kW)	50.8 HP (37.9 kW)

HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	27.6	702
B	21.7	550
C	23.5	596
D	23.0	583
E	11.4	290
F	11.8	300
G	33.4	849
H	1.3	34
I	16.7	425
J	21.6	549
K	27.1	688
L	48.4	1230
*L'	52.2	1325
M	27.9	709
N	39.6	1005
O	9.0	230
P	48.6	1234
Q	40.2	1022
R	42.5	1079

*L' to Quick Attach ends



CHALLENGER MT765E DIESEL